

[72] Inventors **James E. Marshall**
Westminster;
Richard E. Henderson, Huntington Beach,
both of Calif.
[21] Appl. No. **876,341**
[22] Filed **Nov. 13, 1969**
[45] Patented **Oct. 19, 1971**
[73] Assignee **Mattel, Inc.**
Hawthorne, Calif.

2,635,882	4/1953	Murray.....	274/1.1
3,165,320	1/1965	Ryan	46/117 UX
3,234,687	2/1966	Elwell.....	46/117
3,389,915	6/1968	Owen et al.....	46/117 X
3,466,050	9/1969	Sindlinger	274/1.1

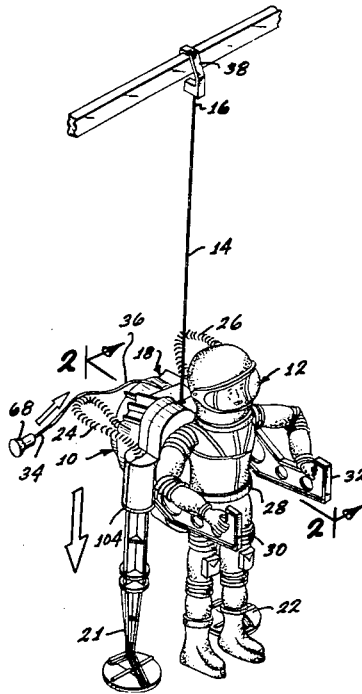
Primary Examiner—Robert Peshock
Assistant Examiner—D. L. Weinhold
Attorney—Seymour A. Scholnick

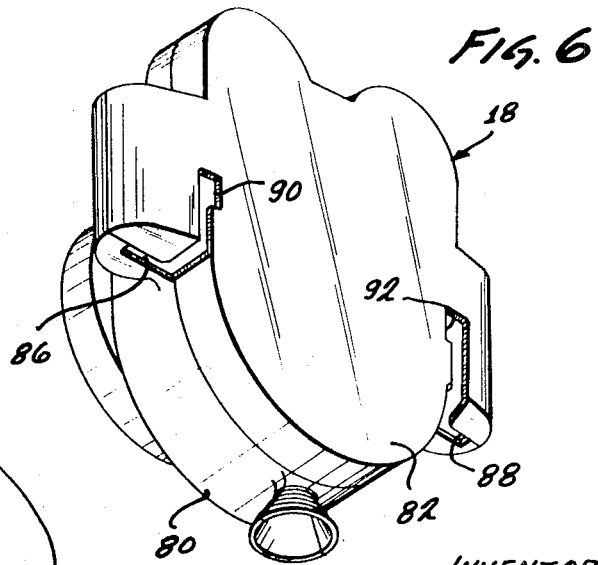
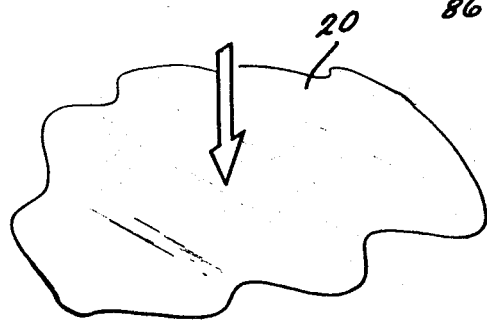
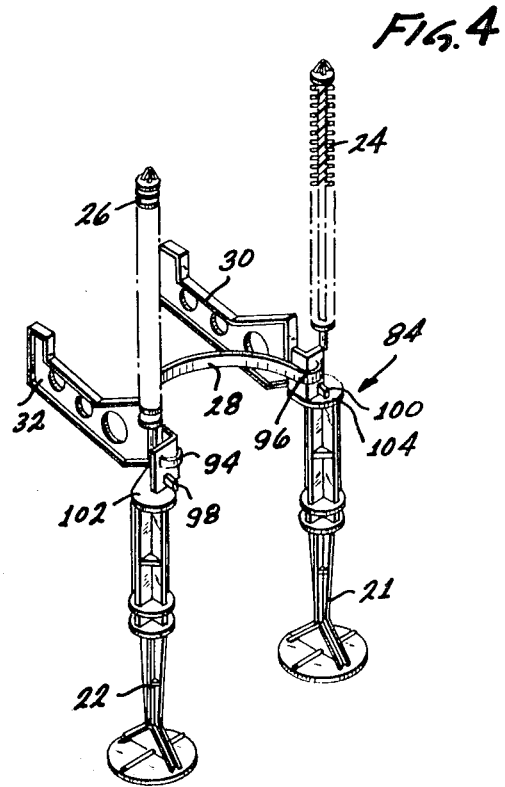
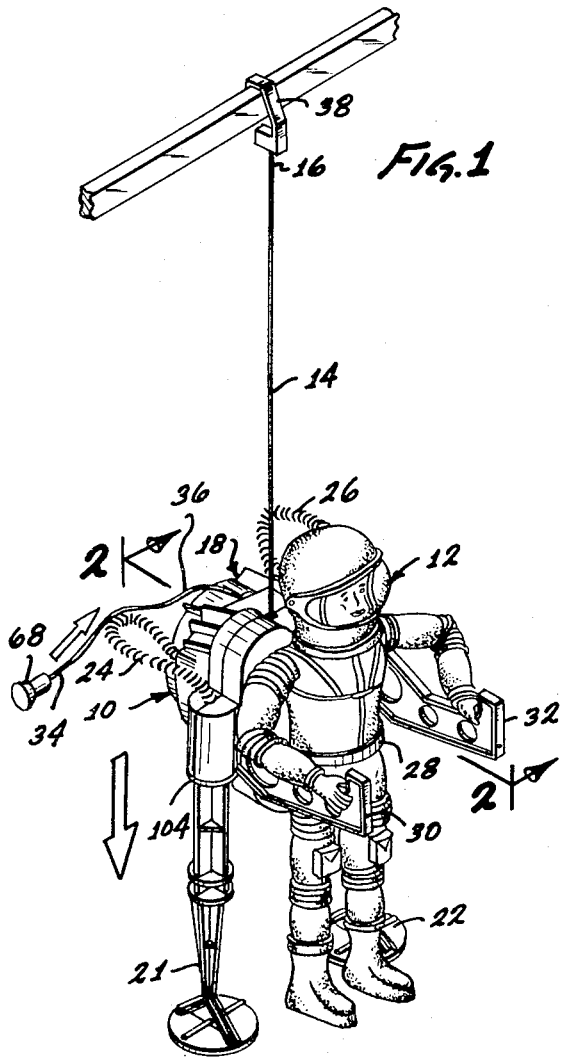
[54] **VOICE UNIT BACKPACK**
4 Claims, 6 Drawing Figs.

[52] U.S. Cl..... **274/9 R,**
274/1.1, 46/117
[51] Int. Cl..... **G11b 3/00**
[50] Field of Search..... **46/117;**
274/1.1, 9

[56] **References Cited**
UNITED STATES PATENTS
2,034,888 3/1936 Wilhelm..... 274/1.1

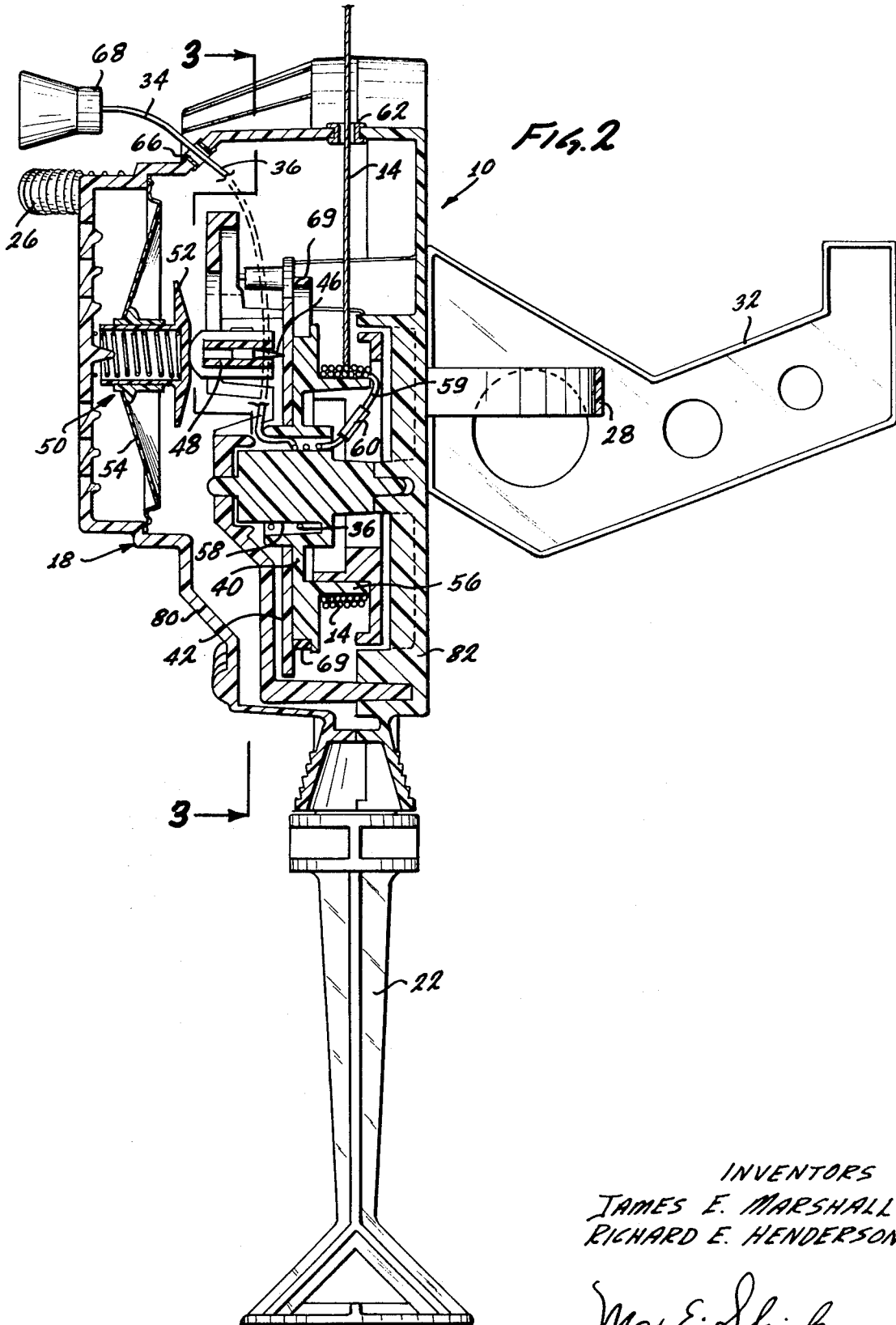
ABSTRACT: Apparatus in the form of a backpack for holding an astronaut figure, which plays a recorded saying as the pack and figure are lowered to the ground. The pack has a phonograph with a turntable that is rotated to play the record by pulling a string out of the pack. The string is pulled out by holding an outer end of the string and allowing the pack to slowly fall to the ground. The phonograph is contained in a housing, and the housing is supported on a pair of elongated members representing struts, the members having an integral strap for holding the toy figure to the housing.





INVENTORS
 JAMES E. MARSHALL
 RICHARD E. HENDERSON

BY *Max E. Shirk*
 ATTORNEY



INVENTORS
JAMES E. MARSHALL
RICHARD E. HENDERSON

BY *Max E. Shirk*
ATTORNEY

FIG. 3

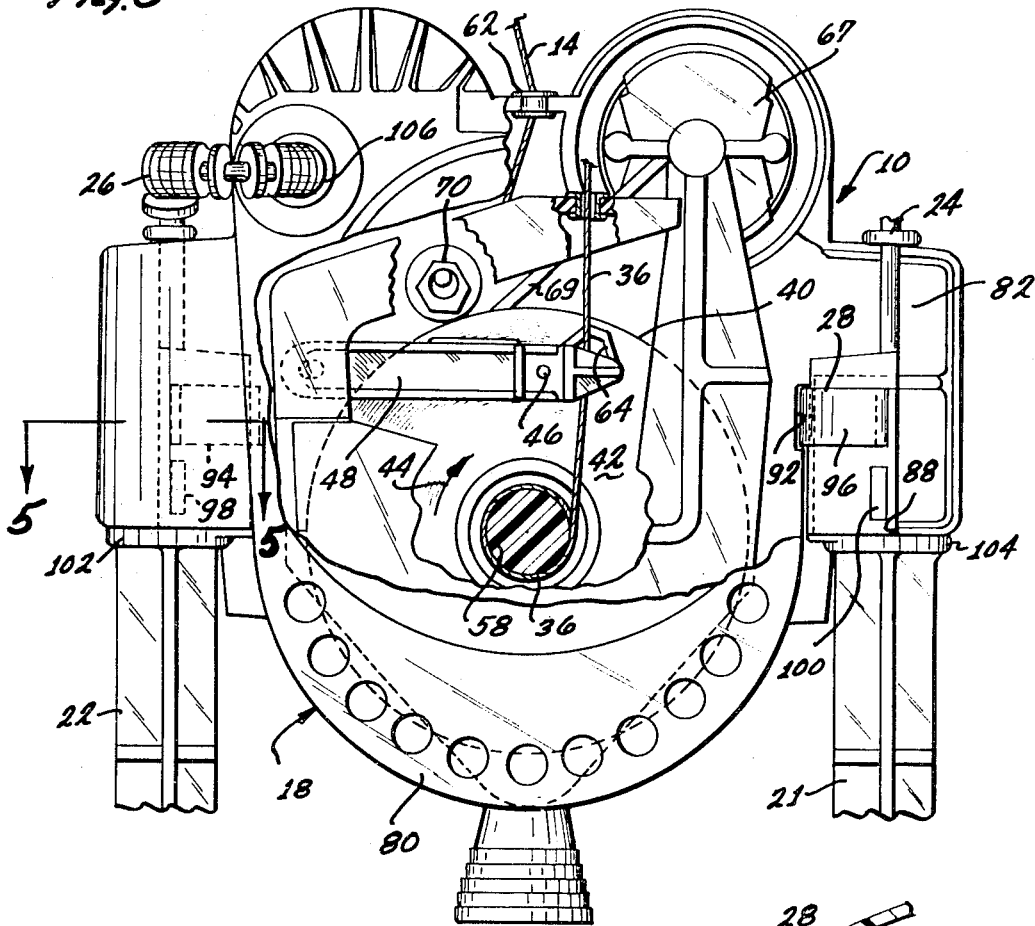
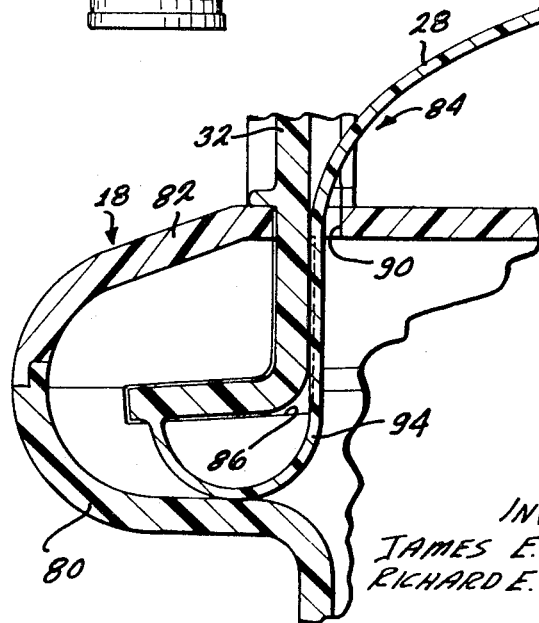


FIG. 5



INVENTORS
JAMES E. MARSHALL
RICHARD E. HENDERSON

BY *Max E. Shirk*
ATTORNEY

VOICE UNIT BACKPACK

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to toys.

2. Description of the Prior Art

One type of miniature toy phonograph which can be concealed in dolls and other toys includes a spring for turning a record turntable to play the record. A cord is provided which can be pulled out to wind the spring and released to allow the spring to turn the turntable in a direction to play the record. This manner of operating a toy phonograph has become so common that a different method of operation would provide novelty that increased the entertainment value of the toy.

Among the various types of toys in which phonographs may be used are toy apparatus for use with toy astronaut figures. An interesting accessory for play with astronaut figures is an accessory representing a backpack. If the backpack is heavy, it will tip over the figure, unless the backpack itself supplies supports for stabilizing the figure. However, a backpack apparatus with portions for holding and stabilizing a figure can be complicated and expensive to manufacture.

OBJECTS AND SUMMARY OF THE INVENTION

An object of the present invention is to provide a toy phonograph which operates in a novel and entertaining manner.

Another object is to provide a backpack for holding toy figures, which is entertaining and sturdy, and which is economical to produce.

In accordance with one embodiment of the invention, a toy phonograph is provided that includes a record turntable which is rotated by pulling a string out of the phonograph housing. The housing is part of a backpack for holding a toy astronaut figure. The string extends through an opening at the top of the backpack, and a child can hold the outer end of the string and release the backpack so it falls slowly to the ground. As the backpack falls to the ground, the phonograph plays sayings appropriate to an astronaut environment. Thus, the toy provides entertainment by simulating the controlled landing of an astronaut on a planet, and provides additional entertainment by reproducing sounds as the astronaut and backpack descend.

The phonograph is constructed so that the weight of the backpack is sufficient to provide the amount of string tension to operate it. A second string is provided which can be pulled out of the backpack to rewind the first string into the phonograph housing. The use of a pair of strings eliminates the need for a spring to rotate the turntable.

The backpack is formed by a phonograph housing with front and rear parts that fit together, and by a separate integral harness member that contains a pair of struts for cushioning the landing of the pack on the ground and a strap for holding the toy figure to the backpack. The housing has a strut-receiving aperture at each side, formed between its forward and rearward parts, that receive each of the strut members. A pair of strap-receiving apertures is also provided in the housing, at positions forward of the strut-receiving apertures. The ends of the strap, which extend from the strut members, are within the housing, while portions of the strap spaced from the ends pass through the strap-receiving openings in the housing. This provides the appearance that the straps are extending from the housing rather than from the struts.

The novel features of the invention are set forth with particularity in the appended claims. The invention will be best understood from the following description when read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a voice unit backpack constructed in accordance with the invention, showing its manner of operation;

FIG. 2 is a sectional view of the backpack taken on the line 2-2 of FIG. 1;

FIG. 3 is a sectional view of the backpack taken on the line 3-3 of FIG. 2;

FIG. 4 is a perspective view of the harness member of the backpack of FIG. 1;

FIG. 5 is a partial view taken on the line 5-5 of FIG. 3; and

FIG. 6 is a perspective view of the housing portion of the backpack of FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 illustrates a backpack assembly 10 which can hold an astronaut figure 12. The pack assembly includes a phonograph with a record turntable that can be rotated to play any one of several sayings. The phonograph is rotated in the playing direction by pulling a playing string 14 out of the pack. This can be accomplished by holding an outer end 16 of the string above the ground or any other landing surface 20 and allowing the backpack assembly 10 to descend to the ground. As the pack assembly descends, the string is pulled out and the phonograph plays a recording. The recordings may be chosen to be those which represent sayings that an astronaut might make, together with background beeps representing signals which one might expect to hear in an astronaut's environment.

The backpack assembly includes a housing 18 and a pair of strut members 21, 22 depending from the housing for supporting it above the ground. The strut members represent struts or shock absorbers, of a type which may be used on landing vehicles to cushion impact with the ground. The strut members 21, 22 serve primarily to hold the backpack and figure 12 stably upright on the ground. Even if the figure's legs do not touch the ground, the pads at the bottom of the struts can generally prevent toppling, and if the figure's legs do touch the ground, the apparatus is even more stably supported. The struts also help to prevent the housing 18 against breakage if a child releases the apparatus while it is still some distance above the ground.

To further cushion the apparatus, a pair of elongated cushioning members 24, 26 are provided that extend to positions behind and above the housing 18. If the assembly is dropped on its rear or top, the cushioning members 24, 26 help to absorb the impact to prevent breakage. The backpack assembly also includes a strap 28 for encircling the waist of the toy figure to hold it to the housing 18, and a pair of arm rests 30, 32 for receiving the arms of the figure. Even if the strap 28 is not held tight, it will remain around the waist of the figure, because the figure's arms are supported by the arm rests that prevent the figure from falling down relative to the backpack.

In playing with the apparatus, a child typically uses a figure 12 which he may play with independently of the backpack apparatus. The figure can be slipped, feet first, through the strap 28 until the arms of the figure rest on the arm rests. If the playing string 14 has been pulled out of the housing, the child must first rewind it back in by pulling on the outer end 34 of a rewind string 36. After the playing string 14 has been rewound, a child holds the outer end 16 above the ground, by holding it either in his hand or on a toy support apparatus, such as that shown at 38 which helps prevent accidental release of the outer end of the string. The child then releases the backpack apparatus to allow it to descend to the ground. Typically, the pack descends a distance of a few feet during a period of about 5 seconds.

FIGS. 2 and 3 illustrate details of the phonograph mechanism which is contained in the housing 18 of the backpack apparatus. The phonograph includes a record turntable 40 rotatably mounted on the housing, the turntable having a record 42 with several grooves that define several different sayings. When the record turns in the direction of arrow 44, a stylus 46 on a tone arm 48 follows inwardly along a spiral groove to play the recording defined therein. A speaker cone assembly 50 is provided for acoustically amplifying sound from the stylus, the assembly including an armature 52, which is spring biased against the tone arm, and a cone 54 which couples sound from the armature to the air.

The turntable has a first string drum 56 for receiving the playing string 14, and a second string drum 58 for receiving the rewind string 36. Actually, the strings 14, 36 are different halves of a single string which has a center portion 59 that extends between the two drums. A band 60 is fastened to the center portion to prevent the string against creeping from one drum to the other. The two strings 14, 36 are wound in opposite directions around their respective drums 56, 58. Accordingly, when one string 10 is pulled out to play the record, the other string 36 is rewound on its drum, and vice versa.

The strings 14, 36 are installed so that when one string is fully wound on its string drum, the other string is fully unwound from its string drum (a string is fully wound or unwound when it cannot be wound or unwound any further in the normal course of operation). String 14 extends from the drum 56 to an eyelet 62 in the upper portion of the housing, the eyelet 62 being oriented to pass the string in an upward direction therethrough with a minimum of friction. The rewind string 36 passes through an aperture 64 in the tone arm and through another eyelet 66 in the housing.

A governor 67 is provided to regulate speed of the turntable, so as to provide a natural sound. The governor is coupled to the turntable by a belt 69, and the governor rotates for either direction of turntable rotation. The governor can maintain a turntable speed within about 5 percent of an optimum speed which produces the most natural sound, only for a turntable torque of less than a predetermined amount, such as 3 inch-ounces. The torque provided when the backpack dangles on the string is less than this maximum amount, as will be explained below.

In order to play the record, a child first grasps a knob 68 at the end of the rewind string and pulls the string outwardly as far as it will go. As the string 36 is pulled out, it drags the tone arm 48 to the rim of the record, until the tone arm strikes a randomizing cam 70 that determines which of the several grooves the stylus will fall into. As the string 36 is pulled out, the playing string 14 is being wound onto its string drum 56. A knot or the like can be provided near the outer end of the playing string 14 to limit the amount which can be rewound into the housing.

After the string 14 has been fully rewound, it is in condition for the playing of one of the sayings defined by a groove in the record. Normally, a child will install a toy figure on the backpack assembly in the manner shown in FIG. 1, although the device will operate even in the absence of an installed figure. The child then raises the backpack assembly 10 and the outer end of the playing string 14 to a height of a few feet above the ground. He then releases the backpack assembly while holding the outer end of the playing string 14 to allow the backpack assembly to slowly descend along the string onto the ground.

As the backpack and figure descend, their weight pulls against the outer end of the playing string, causing the string 14 to unwind and rotate the turntable 40 in the direction of arrow 44. The stylus on the tone arm follows one of the spiral record grooves and reproduces the sound defined therein. While the turntable rotates, the rewind string 36 is being rewound into the housing. It is generally desirable to hold the outer end of the playing string at a level wherein the stylus reaches the end of the record groove shortly before the backpack assembly reaches the ground. Thus, the assembly descends to the ground in the manner in which an astronaut might be expected to land on a planet, and it creates sounds which are appropriate to an astronaut.

In order to assure rotation of the turntable 40 when the backpack assembly is allowed to descend from the playing string, the backpack must be provided with sufficient mass. This mass produces a gravity-caused force or weight, which pulls the string out of the phonograph housing. In designing the phonograph mechanism, the designer can calculate the weight of the entire backpack assembly 10 and choose a diameter of the string drum 56 on which the playing string 14 is wound, to assure proper playing. The diameter of the string

drum 56 must assure a sufficient torque to rotate the turntable when the weight of the backpack is applied at the radius of the drum.

It is generally desirable to allow the backpack to operate even when a toy figure is not held thereon, although the diameter of the playing string drum 56 can be chosen so that the weight of the fixture must be added to the backpack assembly to properly operate the phonograph. The backpack assembly may have a weight such as 3 ounces, and the diameter of the string drum 56 may be about 1 inch, which can generally provide sufficient torque to operate the mechanism. If the mechanism requires greater torque, then the diameter of the string drum must be made larger, which requires a longer falling distance to play a record of given length. It may be noted that the rewind drum 58 is of much smaller diameter than the string drum 56. This is because a child can easily apply a force of more than several ounces on the rewind string 36, and a smaller drum allows complete rewinding to occur with a shorter pulling length of the string.

The phonograph can be played by a child holding the backpack in one hand and pulling the playing string 14 outwardly with his other hand. However, a child generally provides too much force, so the record plays too fast and sounds "squeaky." The governor 67 cannot sufficiently slow the turntable if a torque several times greater than optimum is applied. If a child tries to apply a smaller force, he typically cannot maintain the force constant or pull up the string at a constant rate, so the record does not play as smoothly as when he merely allows the backpack assembly to fall while holding the string. If it is desired to allow a child to pull out the string by hand while holding the backpack assembly, a much smaller string drum for the playing string 14 should be provided, and a governor must be provided which can better regulate the record playing speed. A governor which can provide better regulation is generally somewhat more expensive and creates much higher friction.

The outer portions of the backpack assembly, including the housing 18, struts 21, 22, arm rests 30, 32, strap 28 and cushioning members 24, 26, are formed as three integral parts. These include two housing sections 80, 82, shown in FIG. 6 and a harness member or assembly 84, shown in FIG. 4. The harness assembly is an integral member which is injection molded, with the arm rests 30, 32 and strap 28 also lying in the same place in the mold. However, the struts 21, 22 are turned to move the arm rests toward each other to the position shown in FIG. 4, in order to install the strut assembly on the housing 18. The housing 18 has a pair of openings 86, 88 formed between the two housing portions 80, 82 through which the struts 21, 22 can extend. The front housing portion has a pair of strap-receiving apertures 90, 92 through which the strap extends. The provision of separate apertures 90, 92 which are forward of the openings 86, 88 which receive the struts, makes it seem as though the strap extends from the backpack housing portion instead of from the struts. It would normally be expected that a strap would extend from the housing, and if it appeared to extend from the struts it would create an artificial appearance. The openings 86, 88 and 90, actually serve as different openings, even though the openings on each side are connected together.

In installing the strut assembly 84, it is first turned to the position shown in FIG. 4 so that the end portions 94, 96 of the straps are against the arm rests 32, 30. One side of the strut assembly is installed in one side of the forward housing portion 82 by sliding them upwardly into slot 92, as shown in FIG. 5. The other side of the strut assembly can be similarly installed, and the rear portion 80 of the housing attached to the front portion 82 of the housing to complete the assembly. The struts each carry protrusions 98, 100 that engage the lower walls of the front housing portion to prevent the strut assembly from being pulled downwardly out of the housing, and they carry a pair of disc-shaped ledge members 102, 104 that abut the bottom walls of the housing to prevent upward movement of the strut assembly. Thus, the strut assembly is firmly held in place

once it is installed. After the front and rear housing portions are connected together, the cushioning members 24, 26 are installed by bending them over to the positions shown in FIG. 1 and inserting their outer ends into holes 106 (FIG. 3) in the housing.

Thus, the invention provides a voice unit backpack which operates in a novel manner, producing sounds as it descends onto the ground. The apparatus also is constructed in an economical manner, both in the voice unit portion and the housing and harness portions. The voice unit operates without the need for a spring motor. The harness assembly is constructed as a single integral member, so it can be formed in a single injection molding step, and can be installed rapidly and in a manner that provides an attractive and realistic appearance.

Although particular embodiments of the invention have been described and illustrated herein, it is recognized that modifications and variations may readily occur to those skilled in the art, and consequently, it is intended that the claims be interpreted to cover such modifications and equivalents.

What is claimed is:

1. A toy phonograph comprising:

- a housing;
- record means defining sounds, said record means movably mounted in said housing;
- means for producing sounds defined by said record means;
- a string having an outer end, and having an inner end portion coupled to said record means to move it in a direction to play it when the outer end of said string is pulled which at least a predetermined force out of said housing; and
- means for rewinding said string into said housing, said housing and the contents therein having a mass which produces a weight which is at least equal to said predetermined force, whereby to play said record by holding said outer end of said string while said housing falls down.

2. The toy phonograph described in claim 1 wherein:

said record means comprises a turntable rotatably mounted on said housing, said turntable having a record and first and second string-receiving portions;

said string is a first string which is coupled to said first string-receiving portion to wind thereon; and

said means for rewinding comprises a second string having an inner end portion coupled to said second string-receiving portion to wind thereon, said first and second strings installed so that each is wound on its string-receiving portion when the other string is unwound from its string-receiving portion.

3. The toy phonograph described in claim 2 wherein: said first and second strings are formed by a single string with a center portion extending between said first and second string-receiving portions.

4. A toy phonograph comprising:

- a housing;
- record means defining sounds, said record means movably mounted in said housing;
- means for producing sounds defined by said record means;
- a string having an outer end, and having an inner end portion coupled to said record means to move it in a direction to play it when the outer end of said string is pulled with at least a predetermined force out of said housing; and
- means for rewinding said string into said housing, said housing and the contents therein having a mass which produces a weight which is at whereby to play said record by holding said outer end of said string while said housing falls down, said housing having upper and lower ends, means representing landing struts extending downwardly from said lower end, and a hole opening upwardly for permitting said string to be pulled upwardly out of said housing, whereby when a child holds the outer end of said string, the housing descends in an upright position so that said landing struts can hit the ground.

5
10
15
20
25
30
35
40
45
50
55
60
65
70
75